

## **EASY AXIS MAGNETIC AMPLIFIER**

### **Abstract of the Disclosure**

Techniques for improved semiconductor device performance are provided. In one  
5 aspect, a semiconductor device is provided. The device comprises at least one free  
magnetic layer, and a magnetic amplifier interacting with the free magnetic layer  
comprising two or more magnetic layers with at least one nonmagnetic layer  
therebetween. The nonmagnetic layer may be configured to provide parallel exchange  
coupling  $J$  of the magnetic layers in a range of  $0 < J < \frac{4\pi t^2 M_s^2 n_y}{b}$ , the magnetic layers  
10 having a long axis and a short axis, wherein  $t$  is a thickness of each magnetic layer,  $M_s$  is  
magnetization,  $n_y$  is a demagnetizing factor defined along the short axis of the magnetic  
layers and  $b$  is a diameter along a short axis of the magnetic layers. A method for  
switching a semiconductor device having at least one free magnetic layer is also provided.